

GENOMIC DIVERSITY OF XEROPHILIC BACTERIA FROM DESERT SOIL OF TIERRA CALIENTE, MICHOACÁN

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Deserts are biomes of great interest worldwide, since a large surface of the planet is desert or is in the process of desertification (Foley et al. 2005). In Mexico, there are many different desert regions, that have not yet been explored using metagenomic techniques, such as the Tierra Caliente region, in Michoacán, which represents an opportunity to better understand the microbial diversity of these Mexican regions and investigate their mechanisms of resistance to extreme conditions.

The present study proposes to analyze the genomic diversity and potential metabolism of xerophilic bacteria, present in desert sediments of the Zicuirán-Infiernillo biosphere reserve, in Tierra Caliente, Michoacán, through genomic and metagenomic approaches and the use of bioinformatics tools, reducing the limitations of microbial culture techniques and environmental ribosomal gene amplification. According to previous studies in different deserts around the world, it is expected that there will be a predominance of phyla: *Actinobacteria*, *Bacteroidetes*, *Proteobacteria* (Connon et al. 2007) and other bacterial lineages that include: *Gemmatimonadetes*, *Firmicutes* and *Cyanobacteria* (Fierer et al. 2012), which may be comparatively more abundant in this type of soils than in other biomes (Bahl et al. 2011), as well as bacteria with the genetic potentials to survive desiccation conditions, extreme temperature, and high solar radiation.

As a result of this study, genes of agroindustrial interest may be identified, useful in bioremediation processes and with future biotechnological applications (González-Pastor and Mirete, 2010). Furthermore, extremophilic microorganisms have been of special interest in astrobiology, since they serve as models to understand the emergence of life in the early age of our planet (Cavalazzi et al. 2018).

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Fig. 1. Photograph of the Tierra Caliente region (top) and location of the Zicuirán Infiernillo biosphere reserve, in Michoacán (bottom) (Pedrerio, 2010).

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